

Abstract of the Disclosure

A composition and method for a Catalytic Partial Oxidation (CPO) of methane to synthesis gas. The catalyst allows the process to proceed at low residence time providing a long time thermal stability. The perovskite structure $[A_z A'_{1-z}][B_{1-x-y} Ni_x Rh_y] O_{3-\delta}$ of the catalyst is obtained using mainly La, Sr, as A and A' cation sites (A, A': actinide and/or lanthanide, elements and/or elements from Group I and II) and mainly Fe, Ni, as B cation sites (B: transition metal element and/or element from Group III to V).